

In the Claims

The present application as filed contains claims 1 - 28. Before calculating the filing fee, please substitute new claims 29 - 55 for the existing claims.

29. A retractable syringe assembly designed for one use, comprising:

5 a hollow syringe body comprising a barrel having a front end portion containing a retraction mechanism having a retractable needle and continuous retaining member configured for operation by forward movement of a plunger;

the continuous retaining member having one outside mating surface making a seal for a variable fluid chamber in the barrel;

10 a plunger having a front end portion comprising a head and a supporting surface on the front end portion having a plunger seal element fixed on the supporting surface;

the plunger being reciprocally mounted in said barrel with the plunger seal element in sliding sealed contact with the barrel; and

15 the retractable needle retraction mechanism being released for retraction when the plunger is moved forward to release the continuous retaining member, without contact between the plunger seal element and the continuous retaining member and without relative movement between the plunger seal element and its supporting surface.

30. The assembly of claim 29 wherein a structure mounted in the front end portion of the barrel prevents forward motion of the retractable needle during retraction of the needle to prevent pain when the needle is retracted from a patient.

31. The assembly of claim 29 wherein the plunger carries a part which protrudes to contact the continuous retaining member and release the retractable needle when retraction is initiated by pushing on the plunger.

32. The assembly of claim 29 wherein the continuous retaining member is a separable part of the retraction mechanism which acts as a fluid seal for a variable chamber in the barrel behind the separable part.

33. The assembly of claim 31 wherein the continuous retaining member is separable from the retractable needle when retraction is initiated by pushing on the plunger.

34. The assembly of claim 33 wherein the continuous retaining member is separated from the retractable needle by means of force applied by said part to said continuous retaining member when retraction is initiated by pushing on said plunger.

35. The assembly of claim 29 wherein the plunger has an end cap and the hollow syringe body has a back end portion having an opening for receiving the end cap.

36. The assembly of claim 35 wherein the plunger end cap is lodged in the opening of the back end portion of the hollow syringe body by pressing the end cap to cause retraction, thereby stopping the plunger from further forward movement and preventing reuse.

37. A retractable syringe assembly designed for one use, comprising:
a hollow syringe body comprising a barrel having a front end portion in which a retraction mechanism is mounted, the retraction mechanism having a needle which is retractable and a continuous retaining member which holds the retractable needle;
the retraction mechanism being operable by forward movement of a plunger without distorting the barrel;

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a plunger having a front end portion comprising a head and a supporting surface located on the front end portion, with a plunger seal element fixed on the supporting surface;

the plunger being reciprocally mounted in said barrel with the plunger seal element in sliding sealed contact with the barrel; and

forward movement of the plunger releases the needle from the continuous retaining member by applying a separating force to the continuous retaining member, without the aid of the plunger seal element and without relative movement between the plunger seal element and its supporting surface.

38. The assembly of claim 37 wherein the continuous retaining member acts as a fixed seal for a variable chamber in the barrel behind the separable part.

39. The assembly of claim 38 wherein a structure mounted in the front end portion of the barrel prevents forward motion of the retractable needle during retraction of the needle to prevent pain when the needle is retracted from a patient.

40. The assembly of claim 37 wherein the continuous retaining member is separable from the retractable needle when retraction is initiated by pushing the plunger to move it forward with respect to the barrel.

41. The assembly of claim 40 wherein the plunger carries a part which protrudes to contact the continuous retaining member and release the retractable needle when retraction is initiated by pushing on the plunger.

42. The assembly of claim 41 wherein the continuous retaining member is separated from the retractable needle by means of force applied by said part to said continuous retaining member when retraction is initiated by pushing on said plunger.

43. The assembly of claim 37 wherein the plunger has an end cap and the hollow syringe body has a back end portion having an opening for receiving the end cap.

44. The assembly of claim 43 wherein the plunger end cap is lodged in the opening of the back end portion of the hollow syringe body by pressing the end cap to cause retraction, thereby stopping the plunger from further forward movement and preventing reuse.

45. A retractable syringe assembly designed for one use, comprising:

a hollow syringe body comprising a barrel having a front end portion in which a retraction mechanism is mounted, the retraction mechanism having a needle which is retractable and a continuous retaining member which holds the needle;

the continuous retaining member having one outside mating surface making a seal for a variable fluid chamber in the barrel;

a plunger having a front end portion comprising a head and a supporting surface located on the front end portion, with a plunger seal element fixed on the supporting surface;

the plunger being reciprocally mounted in said barrel with the plunger seal element in sliding sealed contact with the barrel; and

the retractable needle retraction mechanism being released for retraction when the plunger is moved forward to release the continuous retaining member, without the plunger seal element going beyond said one outside mating surface and without motion of the plunger seal element relative to its supporting surface.

46. The assembly of claim 45 wherein the continuous retaining member acts as a fixed seal for a variable chamber in the barrel behind the separable part.

47. The assembly of claim 46 wherein a structure mounted in the front end portion of the barrel prevents forward motion of the retractable needle during retraction of the needle to prevent pain when the needle is retracted from a patient.

48. The assembly of claim 45 wherein the continuous retaining member is separable from the retractable needle when retraction is initiated by pushing the plunger to move it forward with respect to the barrel.

49. The assembly of claim 48 wherein the plunger carries a part which protrudes to contact the continuous retaining member and release the retractable needle when retraction is initiated by pushing on the plunger.

50. The assembly of claim 49 wherein the continuous retaining member is separated from the retractable needle by means of force applied by said part to said continuous retaining member when retraction is initiated by pushing on said plunger.

51. The assembly of claim 45 wherein the plunger has an end cap and the hollow syringe body has a back end portion having an opening for receiving the end cap.

52. The assembly of claim 51 wherein the plunger end cap is lodged in the opening of the back end portion of the hollow syringe body by pressing the end cap to cause retraction, thereby stopping the plunger from further forward movement and preventing reuse.

53. A retractable syringe assembly designed for one use, comprising:

5 a hollow syringe body comprising a barrel having a front end portion containing a retraction mechanism having a retractable needle and continuous retaining member configured for operation by forward movement of a plunger;

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a biasing element mounted in the front of the barrel;

a plunger having a front end portion comprising a head and a supporting surface on the front end portion having a plunger seal element fixed on the supporting surface; and

where the front end of the barrel has an inwardly sloping wall continuously sloping to the point of contact with the continuous retaining member.

54. A retractable syringe assembly designed for one use, comprising:

a front end retraction mechanism and retractable needle including a continuous retaining member;

10 a plunger having a front end portion comprising a head and a supporting surface on the front end portion having a plunger seal element fixed on the supporting surface;


a rigid plunger seal element stop surface which acts as a plunger seal element stop; and

where the retraction mechanism is operated by forward movement of the plunger to release the retractable needle for retraction while the plunger seal element remains fixed to its supporting surface.

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55. The assembly of claim 54 wherein the plunger operates the retraction mechanism by acting on the continuous retaining member to release the retractable needle for retraction while the plunger seal element remains fixed to its supporting surface.

Respectfully submitted,


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